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DEPARTMENT OF COMMERCE

National Telecommunications and Information Administration

[Docket No. 140925800-4800-01]

RIN [0660-XC013]

Telecommunications Assessment of the Arctic Region

AGENCY: National Telecommunications and Information Administration, U.S. Department of Commerce.

ACTION: Notice of Inquiry.

SUMMARY: Consistent with the *Implementation Plan for the National Strategy for the Arctic Region*, the National Telecommunications and Information Administration (NTIA) issues this Notice of Inquiry (Notice) to seek public comment on the current and potential availability of communications services in the Arctic region.

DATES: Comments must be received no later than [INSERT DATE 30 DAYS AFTER PUBLICATION IN *FEDERAL REGISTER*].

ADDRESSES: Comments may be submitted by email to arcticnoi@ntia.doc.gov.

Comments also may be submitted by mail to: National Telecommunications and Information Administration, U.S. Department of Commerce, 1401 Constitution Avenue, N.W., Room 4898, Attn: Arctic NOI, Washington, DC 20230. Responders should include the name of the person or the organization, as well as a page number on each page of their submissions. Paper submissions should also include a CD or DVD with an electronic version of the document, which should be labeled with the name and organization of the filer. All email messages and comments received are a part of the public record and will generally be posted without change to the NTIA website at <http://www.ntia.doc.gov/federal-register-notice/2014/comments-arctic-noi>. All

personal identifying information (e.g., name, address) voluntarily submitted by the commenter may be publicly accessible. Please do not submit any confidential or business sensitive information. NTIA intends to use the information provided in response to this Notice about potential future plans for communications networks in Arctic Alaska only in the aggregate, excluding companies' names and customer information. Additionally, this information will be used to describe potential future communications developments to fill the gaps where services are not currently provided.

FOR FURTHER INFORMATION CONTACT: Helen Shaw, National Telecommunications and Information Administration, U.S. Department of Commerce, 1401 Constitution Avenue, N.W., Room 4874, Washington, DC 20230; telephone: (202) 482-1157; email hshaw@ntia.doc.gov. Please direct media inquiries to NTIA's Office of Public Affairs, (202) 482-7002.

SUPPLEMENTAL INFORMATION

I. BACKGROUND

On May 10, 2013, President Obama issued the *National Strategy for the Arctic Region* (*National Strategy*) to articulate strategic priorities to enable the United States to “respond effectively to challenges and emerging opportunities arising from significant increases in Arctic activity due to the diminishment of sea ice and the emergence of a new Arctic environment.”¹ The *National Strategy* includes: (1) advancing U.S. security interests; (2) pursuing responsible Arctic Region stewardship; and (3) strengthening international cooperation. The *National Strategy* states that these efforts will be guided by: “providing for the security of the United

¹ *National Strategy for the Arctic Region*, The White House (May 10, 2013), available at http://www.whitehouse.gov/sites/default/files/docs/nat_arctic_strategy.pdf. For purposes of this Notice, the Arctic Region is defined as the geographic region north of the Arctic Circle, which is at 66° 33' 39" North latitude. The area includes offshore areas such as the Chukchi Sea and the Beaufort Sea.

States; protecting the free flow of resources and commerce; protecting the environment; addressing the needs of indigenous communities; and enabling scientific research.”² The United States is a member of an eight nation Arctic Council, also consisting of Canada, the Russian Federation, Denmark, Iceland, Finland, Sweden, and Norway.³

The White House issued the *Implementation Plan for the National Strategy for the Arctic Region (Implementation Plan)* in January 2014, setting forth the methodology, process, and approach for executing the *National Strategy*.⁴ The *Implementation Plan* provides four guiding principles: 1) safeguard peace and stability; 2) make decisions using the best available information; 3) pursue innovative arrangements; and 4) consult and coordinate with Alaska Natives.⁵ Furthermore, the *Implementation Plan* emphasizes that the successful implementation of the *National Strategy* will depend upon the active engagement and coordination with Alaska Natives and the State of Alaska.⁶

The *Implementation Plan* calls on NTIA, with support from the Department of Defense, Department of Homeland Security (U.S. Coast Guard), Department of Transportation, and the Federal Communications Commission (FCC), to “assess the telecommunication infrastructure in

² *Id.* at 4.

³ For purposes of this Notice, the “pan Arctic” region is defined as the region above the Arctic Circle that includes the areas of all eight Arctic Council member nations.

⁴ *Implementation Plan for the National Strategy for the Arctic Region*, The White House, January 2014, available at http://www.whitehouse.gov/sites/default/files/docs/implementation_plan_for_the_national_strategy_for_the_arctic_region_-_fi....pdf.

⁵ *Id.* at 4.

⁶ Press Release, *White House Releases Implementation Plan for the National Strategy for the Arctic Region*, National Security Council (Jan. 30, 2014), available at <http://www.whitehouse.gov/blog/2014/01/30/white-house-releases-implementation-plan-national-strategy-arctic-region>

the Arctic and use new technology to support improved communications in the region, including in areas of sparse population to facilitate emergency response.”⁷ The *Implementation Plan* outlines three distinct deliverables: 1) “[a]ssess current and potential availability of telecommunications services in the Arctic region, including local and long-distance terrestrial, commercial mobile cellular, public safety services, emergency services, navigational safety and satellite voice, and broadband channel availability by the end of 2014;” 2) “[d]evelop a framework that lists and prioritizes opportunities for investment in telecom capacity and capability, with a strong emphasis on innovative technologies with Federal, State, and international public-private partnerships by the end of 2015;” and 3) “[i]n collaboration with the Arctic Council, evaluate feasibility of an Arctic-wide telecommunications network and radio frequency spectrum management with the goals of compatible interference-free operations and Arctic-wide communications by end of the U.S. Chairmanship of the Arctic Council.”⁸

The *Implementation Plan* states further that “[s]uccess of this initiative will be the development of a framework, in coordination with Federal, State, local, tribal, native governments and the commercial enterprise, to prioritize investments in new facility and equipment installations such as high-powered high frequency radio stations, satellite ground stations, fixed microwave radio stations, public safety radio facilities, mobile cellular base stations, and fiber optic cable installations that enhance security and safety in the Arctic.”⁹

NTIA and its Federal partners will leverage information currently available from government, commercial, non-profit, and academic entities. For example, NTIA’s State Broadband Initiative funded a comprehensive assessment of broadband infrastructure across

⁷ *Implementation Plan* at 6.

⁸ *Id.* at 6-7.

⁹ *Id.* at 7.

Alaska, which resulted in an August 2013 report entitled *A Blueprint for Alaska's Broadband Future (Blueprint Report)*.¹⁰ We will also utilize data from the *National Broadband Map* and the *Alaska Emergency Response Guide for Small Communities*.¹¹

II. OBJECTIVES OF THIS NOTICE

Effective communications services are critical to accommodate the increase in commercial, residential, governmental, and other critical economic and social activities across Arctic Alaskan communities, as well as the pan-Arctic region in general. A robust communications infrastructure is a critical tool in economic development, and it is expected that communications networks will contribute to small business development, economic growth, and corresponding employment increases. Accurate and reliable networks and services, such as radionavigation, are critical to the safety and security of the region.

This Notice offers an opportunity for all interested parties to provide information regarding existing and potential communications technologies, services and applications for the Arctic region. We invite input from communication service providers that currently serve, or plan to serve, Arctic Alaska and the pan-Arctic region. We also seek comment from subject matter experts on the questions below. We further invite feedback from all user segments (*e.g.*, residential, business, government, or community organizations) residing within the Alaskan portion of the Arctic and all users whose activities may require communications access across any portion of the Arctic.

For purposes of this Notice, the Arctic Region of Alaska is defined as the geographic region north of the Arctic Circle, which is at 66° 33' 39" North latitude. The area includes offshore

¹⁰ *A Blueprint for Alaska's Broadband Future*, Statewide Broadband Task Force (August 2013), available at <http://www.alaska.edu/files/oit/bbtaskforce/2013-08-AK-Broadband-Task-Force-Report%7CA-Blueprint-for-Alaska's-Broadband-Future.pdf>.

¹¹ *Alaska Emergency Response Guide for Small Communities*, State of Alaska Department of Military and Veterans Affairs and Homeland Security & Emergency Management (March 2013), available at <http://ready.alaska.gov>.

areas such as the Chukchi Sea and the Beaufort Sea. However, parties may submit information and data outside of this geographic area if its inclusion is relevant to the questions that follow.

III. REQUEST FOR COMMENTS ON AVAILABLE AND PLANNED

COMMUNICATIONS SERVICES

The *Implementation Plan* specifies a number of existing and potential services for NTIA to assess, including: local and long-distance terrestrial, commercial mobile cellular, public safety services, emergency services, navigational safety, satellite voice, and broadband services. These services reflect a variety of network technologies. We seek comment on the availability of all network technologies, general communications services, and dedicated networks and special services targeted for specific user segments in Arctic Alaska. Interested parties should, therefore, provide information on the availability and adequacy of networks and services listed below, and any others that support the safety and security, economic development, and other objectives in Arctic Alaska that were noted in the *National Strategy*.

- General Network Technologies: Wireline networks (copper, cable, optical fiber, or hybrid networks), fixed wireless networks (point-to-point, point-to-multipoint), mobile wireless networks, Wi-Fi networks, fiber and microwave-based middle-mile networks, satellite systems, submarine cable networks, terrestrial broadcast networks, high frequency (HF) radio networks, very high frequency (VHF), unlicensed systems, and any forms of hybrid networks.
- General Communications Services: Voice, data, and video services that can be delivered to fixed or mobile devices.
- Dedicated Networks and/or Special Communications Services: Public safety, emergency, search and rescue services, radionavigation, aeronautical, maritime communications, weather services, or other categories for specific user segments.

We seek information about the location and the adequacy of existent networks owned and managed by commercial service providers, government entities, non-profits, research and education entities, or any other ownership and management models. Many of these networks and services target terrestrial-based users (*e.g.*, mobile cellular, terrestrial fiber, fixed wireless). Input should pertain to the network infrastructure and services within the Arctic portion of Alaska. Other services may address the needs of both Alaskan-based and pan-Arctic users (*e.g.*, satellite, maritime communications).

To help guide commenters, we seek information about the availability and adequacy of telecommunications services in the following Arctic Alaskan communities and key geographic locations: Alatna, Allakaket, Ambler, Anaktuvuk Pass, Arctic Village, Atkasuk, Barrow (including Point Barrow), Beaufort Sea area, Beechey Point, Bettles, Cape Blossom, Cape Lisburne, Chalkyitsik, Chandalar, Chuckchi Sea area, Coldfoot, Deadhorse, Evansville, Fort Yukon, Kaktovik, Kiana, Kivalina, Kobuk, Kotzebue, New Allakaket, Noatak, Northstar Island, Noorvik, Nuiqsut, Point Hope, Point Lay, Prudhoe Bay/ Prudhoe Bay Oil Field, Red Dog Mine, Selawik, Sheshalik, Shungnak, Umiat, Venetie, Wainwright, and Wiseman. This list should not be considered all-inclusive, and absence from the list should not preclude responses on other Arctic locations.

We encourage a broad response in order to assist our efforts to develop a comprehensive assessment that considers all service providers, user segments, stakeholders, and other interested parties. We welcome responses and comments covering the following areas: (a) available networks and services; (b) potential networks and services; (c) recommendations to foster the deployment of advanced communication networks and services; and (d) adoption barriers. Please send links to relevant documents, such as studies and reports.

IV. QUESTIONS ABOUT TELECOMMUNICATIONS SERVICES AND TECHNOLOGIES IN ARCTIC ALASKAN COMMUNITIES AND THE PAN-ARCTIC REGION

- (1) Existing and Potential Networks and Services in Arctic Alaska:** Which Arctic Alaskan communities have access to, or lack access to, the network technologies and communications services that enable local residents, businesses, community institutions, local authorities, and other user groups to effectively meet their communications requirements? What network technologies and services are being planned to address both current and emerging user needs?
- (2) Wireline-Based Broadband Services:** Which Arctic Alaskan communities have access to fixed wireline services that offer a minimum broadband speed of 4 Mbps download and 1 Mbps upload?¹² For such communities, is access available to all homes, businesses, and community anchor institutions? For communities with fiber, what factors enable the business case for such deployment? For communities that have advanced speeds via copper-based plant, please cite the types of upgrades undertaken (*e.g.*, copper-bonding, hybrid fiber systems, or middle-mile upgrades to central offices). For communities with microwave or fiber backhaul, what key enablers led to such deployment (*e.g.*, federal or state subsidy, public-private partnerships, innovative business models)?
- (3) Fixed Wireless Broadband Services:** Which Arctic Alaskan communities have access to fixed wireless broadband with minimum broadband speeds of 4 Mbps

¹² Federal Communications Commission, *Tenth Broadband Progress Notice of Inquiry* (August 2014), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0805/FCC-14-113A1.pdf. The Commission applies this benchmark to assess the pace of broadband deployment, and has asked in the cited Notice whether it should modify this threshold.

download and 1 Mbps upload? What are the key advantages and limitations of these networks? What best practices and lessons can be applied to expand fixed wireless solutions to other underserved Arctic Alaskan communities?

(4) Mobile Wireless: Which Arctic Alaskan communities have access to mobile wireless broadband services that offer at least 4 Mbps download and 1 Mbps upload speeds? What percentage of households has replaced wireline services with mobile wireless services? Under what circumstances are mobile wireless services considered the most effective broadband solution for Arctic Alaskan communities, taking into account pricing, coverage, service quality, scale, and other key factors? What are the key barriers (*e.g.*, economic, technology, regulatory, or spectrum availability) preventing wide-scale deployment of third and fourth generation (3G and 4G) technologies in the Arctic Alaskan region? To what extent is the lack of middle-mile fiber or other broadband backhaul to base stations a key barrier to higher speed deployments?

(5) Public Safety Services: Which Arctic Alaskan communities have access to, or lack access to, wire and wireless public safety communications systems used by law enforcement, fire emergency, and emergency medical first responders? Are there plans to extend the Alaska Land Mobile Radio network (ALMR) and the State of Alaska Telecommunications System (SATS) to any Arctic Alaskan communities? What are the benefits and limitations of extending the ALMR and SATS networks to these communities and first responders and what key barriers may limit this extension? Which other network technologies and services are used by public safety professionals (*e.g.*, dispatch land mobile radio systems, commercial mobile radio, mobile satellite services, high-frequency), and what are the key strengths and

limitations of these networks and services? How is communications interoperability achieved among various first responders, and among federal, state, and local agencies? What network technologies and services are being planned for public safety communications, and what are the key enablers and challenges with regard to the rollout of these networks?

(6) Emergency Communications and Search and Rescue: What are the emergency wired and wireless communications services available within the listed Arctic Alaska communities, and other communities and locations, and near and far offshore areas? How would these communities connect into the overall Alaskan communications backbone network in case of a major emergency? To what extent are there areas without any emergency communications services? What communications services are used for search and rescue operations and what is their availability and reliability? Are the existing communications services used for search and rescue operations adequate or are additional services necessary?

(7) Satellite Communications Services: What specific satellite-based services are widely used by Arctic Alaskan communities and users across the pan-Arctic region? What are the strengths and limitations of using satellites generally and for specific communications services? What key dependencies and factors impact the likelihood of these planned systems being launched in a timely manner? Which specific user segments are being targeted and what services will be offered? Do existing and planned satellite systems target the broader pan-Arctic footprint and provide 24/7 availability? For areas where satellites constitute the only form of communications, what ensures reasonable pricing and service quality? In regard to older satellites that were formerly in the geostationary orbit and are now operating in an inclined orbit,

how many hours of operation and what quality of service do they offer in the Arctic Alaskan and in the pan-Arctic area?

(8) Broadcasting and Broadcasting-Satellite Services: What methods are used to receive radio and television broadcast signals in Arctic Alaskan areas? What improvements can be made if such signals are not readily available? Does the Alaska Rural Communications System (ARCS) provide adequate broadcasting coverage in the Arctic Alaskan communities? To what extent do the broadband speeds of other terrestrial and satellite networks enable the delivery of high-quality video?

(9) Submarine Cable Networks: How do existing submarine cable networks currently support the delivery of communications services in Arctic Alaskan communities and the pan-Arctic region? What are the advantages and limitations of these networks? How will new submarine cable facilities being planned for this region contribute to the performance, economics, and overall network access for the previously mentioned services? What is the timetable for building and operating these planned facilities and what key risks could impact their timing, scale, availability, and overall sustainability?

(10) Aeronautical and Maritime Communications: What communications systems and technologies support aircraft and maritime voice and data communications? What are the key strengths and limitations of these networks? What new systems are being planned to address aviation and maritime user needs?

(11) Aeronautical and Maritime Radionavigation: What radionavigation systems are currently used by commercial ships and aircrafts in the Arctic region? What are the key strengths and limitations of these systems, especially with regard to location reliability? What new satellite-based navigation systems are being planned, and what

are their comparative advantages relative to current systems? What key dependencies and factors impact the likelihood of these systems being launched in a timely manner?

(12) Weather and Other Information Services: How effectively do broadcast and other networks support the delivery of weather monitoring alerts (including warnings, watches, and forecasts) and non-weather hazard alerts across Arctic Alaska and the pan-Arctic region, especially with regard to speed of delivery and service reliability? How do Arctic broadcasts and other information reports for weather monitoring compare to those services in other parts of Alaska? What initiatives are underway, or can be recommended, to improve the delivery and receipt of weather information and other critical alerts, including system upgrades and/or new infrastructure deployments? What innovations across satellite imaging and other technology developments offer the greatest potential?

(13) High Frequency Radio Communications (3-30 MHz): How do high frequency (HF) radio systems serve Arctic Alaskan end-users and to what degree are they used especially for emergency and search and rescue communications? What are the comparative advantages and limitations of HF radio relative to other technologies, especially with regard to reliability, privacy, and degree of availability after considering seasonal and temporal variances? Which frequencies are currently used and which ones offer the highest quality of service? What improvements have been made, or are planned, on HF radios to improve communications?

(14) Very High Frequency Radio Communications (30-300 MHz): How do Arctic Alaskan residents use VHF radios to communicate?

(15) Unlicensed (License-Exempt) Systems: What applications and services utilizing unlicensed spectrum bands are used across the Arctic region and to what extent? To what extent is unlicensed spectrum used for providing broadband for residential and business users? What speeds are available to these users? To what extent do power limits and other technical restrictions in unlicensed spectrum bands impede the ability to deliver services to more homes and businesses?

(16) Existing and Potential Networks and Services Across the Pan-Arctic Region: Which pan-Arctic regions have access to, or lack access to, network technologies and communications services critical to the safety and security of the pan-Arctic region, and the increasing activity across commercial, maritime, research, tourism, and other growing sectors? What network technologies and services are being planned across the pan-Arctic region to address both current and emerging user needs?

(17) Fostering the Deployment of Advanced Communications Networks and Services in Arctic Alaskan Communities: What strategies are recommended to facilitate the deployment of additional communications capabilities across Arctic Alaska? These recommendations may involve commercial or public investment, new business models, policy and regulatory changes (federal, state, or local), public-private partnerships, research and innovation developments, or other suggestions. Please comment on best practices in other Alaskan communities and other rural and remote areas.

(18) Fostering the Deployment of Advanced Communication Networks and Services in the Pan-Arctic Region: What would facilitate the deployment of advanced networks to ensure the safety, security, and the commercial interests of the United States and other international users in the pan-Arctic region? These

recommendations may involve commercial or public investment, new business models, policy and regulatory changes (federal or international), international agreements, public-private partnerships, research and innovation developments, or other suggestions. We seek comment on best practices from other pan-Arctic locations, and other rural and remote areas.

- (19) Adoption Barriers:** What key barriers limit the adoption of existing services for users across both Arctic Alaska and the broader pan-Arctic region? How can these adoption barriers be addressed?

Dated: September 29, 2014

Lawrence E. Strickling,

Assistant Secretary for Communications and Information.